

## **CLAIMS**

What is claimed is:

1. A mounting assembly for a wheel suspension system of a vehicle having a vehicle  
5 body, said mounting assembly comprising:  
a support structure having an aperture and adapted to be mounted to the vehicle  
body;  
a piston rod at least partially disposed within said aperture and displaceable relative  
to said support structure along a line of travel;  
10 a plate mounted to said piston rod and moving relative to said support structure  
during said displacement of said piston rod; and  
an insulator disposed between said support structure and said plate for coupling said  
piston rod to said support structure;  
said insulator having a first portion defining a first resistance for isolating said  
15 displacement of said piston rod and said plate during an application of a first force along said  
line of travel in a first direction which at least partially compresses said first portion, and a  
second portion defining a second resistance with said second resistance being greater than  
said first resistance for controlling said displacement of said piston rod and said plate after  
said application of said first force and during an application of a second force along said line  
20 of travel in said first direction wherein said second force is greater than said first force such  
that both said first and second portions are at least partially compressed.
2. The assembly as set forth in claim 1 wherein said first portion is at least partially  
compressed before said second portion is at least partially compressed.
- 25 3. The assembly as set forth in claim 1 wherein said first and second portions of said  
insulator are formed of the same material.
4. The assembly as set forth in claim 1 wherein said first and second portions of said  
30 insulator are formed of a common homogeneous material.

5. The assembly as set forth in claim 4 wherein said common homogeneous material is further defined as micro-cellular polyurethane.

5           6. The assembly as set forth in claim 1 wherein said first portion of said insulator has a first maximum width and said second portion of said insulator has a second maximum width which is larger than said first maximum width to define a ledge on said second portion extending outwardly beyond said width of said first portion.

10           7. The assembly as set forth in claim 6 wherein said first portion has a first height and said second portion has a second height smaller than said first height.

            8. The assembly as set forth in claim 7 wherein said first height is 3 times larger than said second height.

15           9. The assembly as set forth in claim 1 wherein said first portion has an annular configuration defining a first circumference.

            10. The assembly as set forth in claim 9 wherein said second portion has an annular configuration defining a second circumference which is larger than said first circumference to define an annular ledge on said second portion extending outwardly beyond said circumference of said first portion.

25           11. The assembly as set forth in claim 10 wherein said first portion and said second portion having said annular ledge are formed of a common homogeneous material.

            12. The assembly as set forth in claim 6 wherein said plate has a width at least equal to said second maximum width of said second portion and said insulator is mounted to said piston rod abutting said plate.

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13. The assembly as set forth in claim 12 wherein said piston rod includes a notch with said plate abutting said notch to mount said plate to said piston rod.

14. The assembly as set forth in claim 12 wherein said support structure includes a  
5 first cup at least partially surrounding said first portion and compressing said first portion without compressing said ledge and said second portion when said first force is applied.

15. The assembly as set forth in claim 14 wherein said support structure includes a flange extending outwardly from said first cup such that during said application of said  
10 second force, said ledge of said second portion engages and compresses against said flange to transmit loads of said second force from said plate to said support structure.

16. The assembly as set forth in claim 15 further including a jounce bumper disposed about said piston rod for translating movement of the wheel suspension system  
15 during application of said second force.

17. The assembly as set forth in claim 16 wherein said jounce bumper is mounted to said plate on an opposite side from said insulator such that loads experienced by said jounce bumper are translated through said plate, said ledge of said second portion, and into said  
20 support structure.

18. The assembly as set forth in claim 1 further including a second insulator mounted to said support structure for further coupling said piston rod to said support structure and for further isolating said displacement of said piston rod and said plate when  
25 said first force is applied along said line of travel in said first direction.

19. The assembly as set forth in claim 18 wherein said support structure includes a second cup with said second insulator mounted within said second cup.

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20. An insulator for a mounting assembly of a wheel suspension system in a vehicle having a vehicle body wherein the mounting assembly includes a support structure mounted to the vehicle body and a piston rod displaceable relative to the support structure along a line of travel with said insulator disposed adjacent the support structure for coupling the piston rod to the support structure, said insulator comprising:

a first portion defining a first resistance for isolating the displacement of the piston rod during an application of a first force along the line of travel in a first direction which at least partially compresses said first portion; and

a second portion defining a second resistance with said second resistance being greater than said first resistance for isolating and translating the displacement of the piston rod after the application of the first force and during an application of a second force along the line of travel in the first direction wherein the second force is greater than the first force such that both said first and second portions are at least partially compressed.

21. The insulator as set forth in claim 20 wherein said first portion is at least partially compressed before said second portion is at least partially compressed.

22. The insulator as set forth in claim 20 wherein said first and second portions are formed of the same material.

23. The insulator as set forth in claim 20 wherein said first and second portions are formed of a common homogeneous material.

24. The insulator as set forth in claim 23 wherein said common homogeneous material is further defined as micro-cellular polyurethane.

25. The insulator as set forth in claim 20 wherein said first portion has a first maximum width and said second portion has a second maximum width which is larger than said first maximum width which defines a ledge on said second portion extending outwardly beyond said width of said first portion.

26. The insulator as set forth in claim 25 wherein said first portion has a first height and said second portion has a second height smaller than said first height.

5           27. The insulator as set forth in claim 26 wherein said first height is 3 times larger than said second height.

28. The insulator as set forth in claim 20 wherein said first portion has an annular configuration defining a first circumference.

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29. The insulator as set forth in claim 28 wherein said second portion has an annular configuration defining a second circumference which is larger than said first circumference to define an annular ledge on said second portion extending outwardly beyond said circumference of said first portion.

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30. The insulator as set forth in claim 29 wherein said first portion and said second portion having said annular ledge are formed of a common homogeneous material.